

FIG. 1

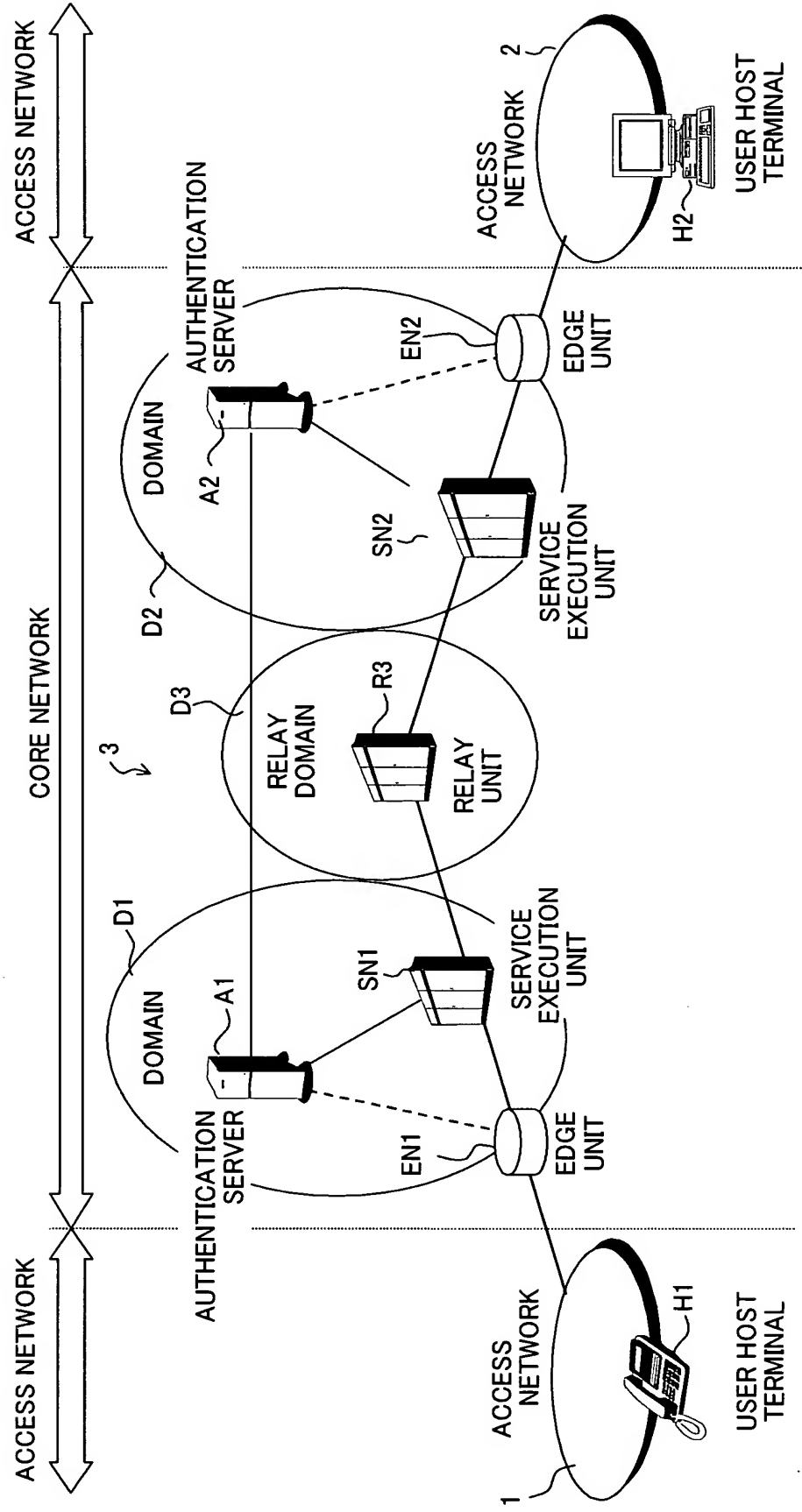


FIG. 2A

AN EXAMPLE OF L-SPC

ITEM	NAME	CONTRACT CONDITION	COMMENT
1	DATA COMPRESSION (CONNECTION SITE NOT SPECIFIED)	COMPRESS DATA IF HTTP	EXECUTED BY A SOURCE OF TRANSFER FOR CONTROLLING AT PROTOCOL LEVEL
2	IP TELEPHONE CHARGE DISCOUNT (TELEPHONE COMPANY NOT SPECIFIED)	INSERT 15 SECONDS VOICE CM BEFORE START	TELEPHONE CHARGE IS DISCOUNTED BECAUSE OF INSERTION OF SPONSOR CM
3	E-COMMERCE (Business to Consumer)	APPLY UNCONDITIONARY SSL (PACKET ENCRYPTION) TO SITE	THERE EXIST MANY SITES HAVING THE SAME KIND OF CONDITION

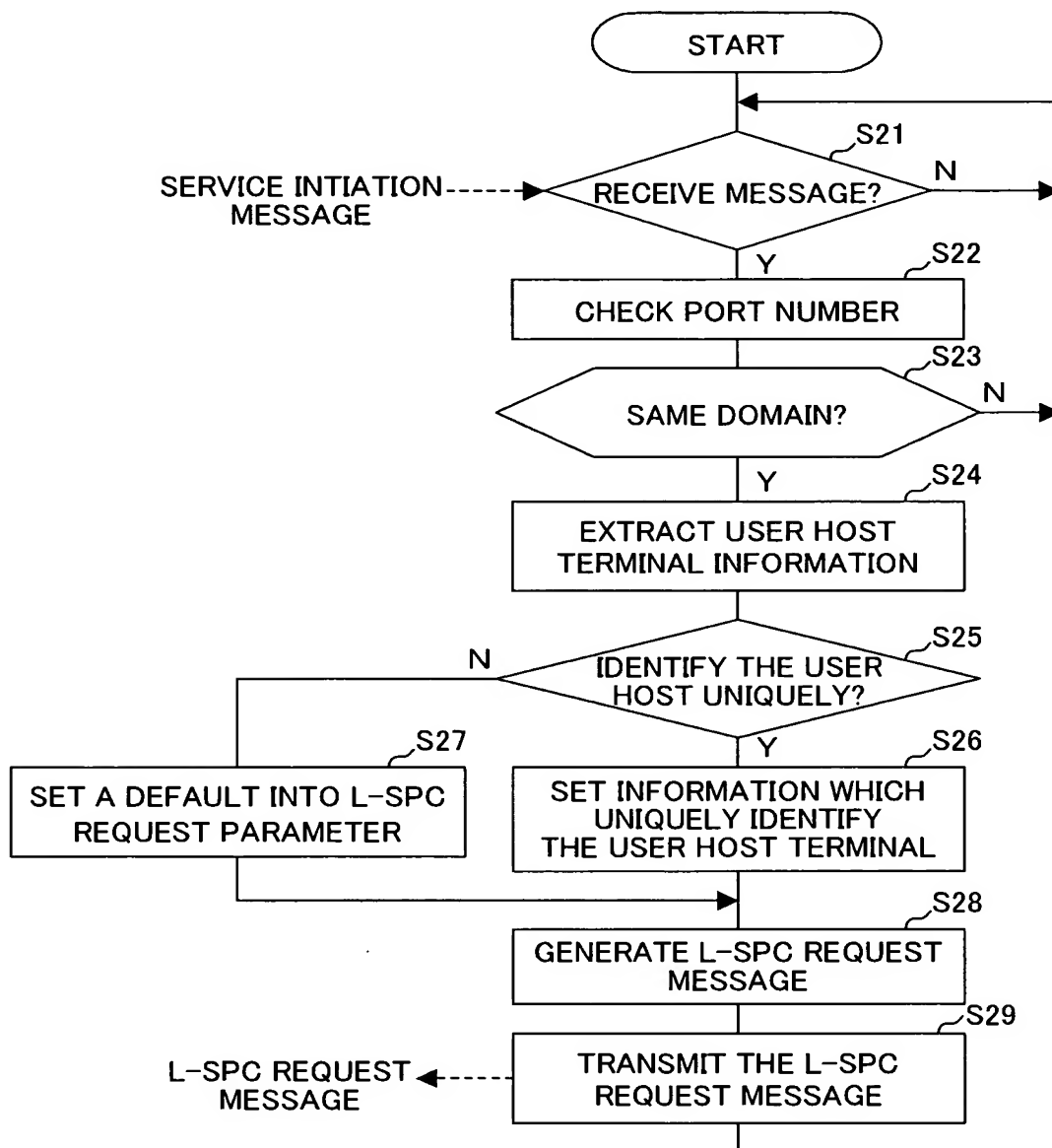
FIG. 2B

AN EXAMPLE OF GLOBAL SPC

ITEM	NAME	CONTRACT CONDITION	COMMENT
1	STREAMING SERVICE PROVIDED BY COMPANY A	INSERT 30 SECONDS CM BEFORE BROADCAST	TELEPHONE CHARGE IS DISCOUNTED BECAUSE OF INSERTION OF SPONSOR CM
2	IP TELEPHONE	TELEPHONE CHARGE IS DISCOUNTED IF A CERTAIN TELEPHONE COMPANY IS SPECIFIED	DEFINED IN G-SPC BECAUSE DESTINATION TELEPHONE COMPANY ONLY IS REFERRED TO
3	E-COMMERCE (Business to Consumer)	PROVIDE A DESIGNATED SPECIFIC ENCRYPTION SYSTEM WITH A CERTAIN SITE	A CASE PROVIDING A SPECIFIC FUNCTION OF A SITE

FIG. 3

**THE L-SPC REQUEST MESSAGE TRANSMISSION PROCESSING
BY THE APPLICATION AUTHENTICATION MODULE**



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sequenceDiagram
    participant D1 as DOMAIN D1
    participant D2 as DOMAIN D2
    participant UH1 as USER HOST TERMINAL H1
    participant SEU1 as SERVICE EXECUTION UNIT SN1
    participant AS1 as AUTHENTICATION SERVER A1
    participant AS2 as AUTHENTICATION SERVER A2
    participant SEU2 as SERVICE EXECUTION UNIT SN2

    UH1->>SEU1: OPERATE TO TRANSMIT S1
    SEU1->>AS1: SERVICE INITIATION MESSAGE
    AS1->>D2: SEARCH G-SPC OF USER HOST TERMINAL H1 S4
    AS2->>SEU2: GENERATE AND TRANSMIT G-SPC REPLY MESSAGE S5
    SEU2->>AS2: G-SPC RESPONSE MESSAGE S6
    AS2->>SEU2: CHECK NORMALITY OF MESSAGE S7
    SEU2->>SEU1: EXTRACT G-SPC AND STORE IT INTO G-SPC MANAGEMENT TABLE
    SEU1->>UH1: G-SPC REQUEST MESSAGE S3
    SEU1->>SEU2: NEED G-SPC REFERENCE?
    SEU2->>SEU1: GENERATE AND TRANSMIT G-SPC REQUEST MESSAGE S2
    SEU1->>UH1: G-SPC REQUEST MESSAGE S3
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The diagram illustrates the G-SPC request and response process between two domains, DOMAIN D1 and DOMAIN D2. The process involves several components: USER HOST TERMINAL H1, SERVICE EXECUTION UNIT SN1, AUTHENTICATION SERVER A1, SERVICE EXECUTION UNIT SN2, and AUTHENTICATION SERVER A2. The process begins with the USER HOST TERMINAL H1 sending an "OPERATE TO TRANSMIT" message (S1) to SERVICE EXECUTION UNIT SN1. SERVICE EXECUTION UNIT SN1 then sends a "SERVICE INITIATION MESSAGE" to AUTHENTICATION SERVER A1. AUTHENTICATION SERVER A1 sends a "SEARCH G-SPC OF USER HOST TERMINAL H1" message (S4) to SERVICE EXECUTION UNIT SN2. SERVICE EXECUTION UNIT SN2 sends a "GENERATE AND TRANSMIT G-SPC REPLY MESSAGE" message (S5) to AUTHENTICATION SERVER A2. AUTHENTICATION SERVER A2 sends a "G-SPC RESPONSE MESSAGE" (S6) to SERVICE EXECUTION UNIT SN2. SERVICE EXECUTION UNIT SN2 then sends a "CHECK NORMALITY OF MESSAGE" message (S7) to AUTHENTICATION SERVER A2. AUTHENTICATION SERVER A2 sends a "G-SPC REQUEST MESSAGE" (S3) to SERVICE EXECUTION UNIT SN1. SERVICE EXECUTION UNIT SN1 then sends a "NEED G-SPC REFERENCE?" message to SERVICE EXECUTION UNIT SN2. SERVICE EXECUTION UNIT SN2 sends a "GENERATE AND TRANSMIT G-SPC REQUEST MESSAGE" (S2) to SERVICE EXECUTION UNIT SN1. Finally, SERVICE EXECUTION UNIT SN1 sends the "G-SPC REQUEST MESSAGE" (S3) to the USER HOST TERMINAL H1. The process concludes with SERVICE EXECUTION UNIT SN2 sending a "G-SPC REQUEST MESSAGE" (S3) to the USER HOST TERMINAL H1.

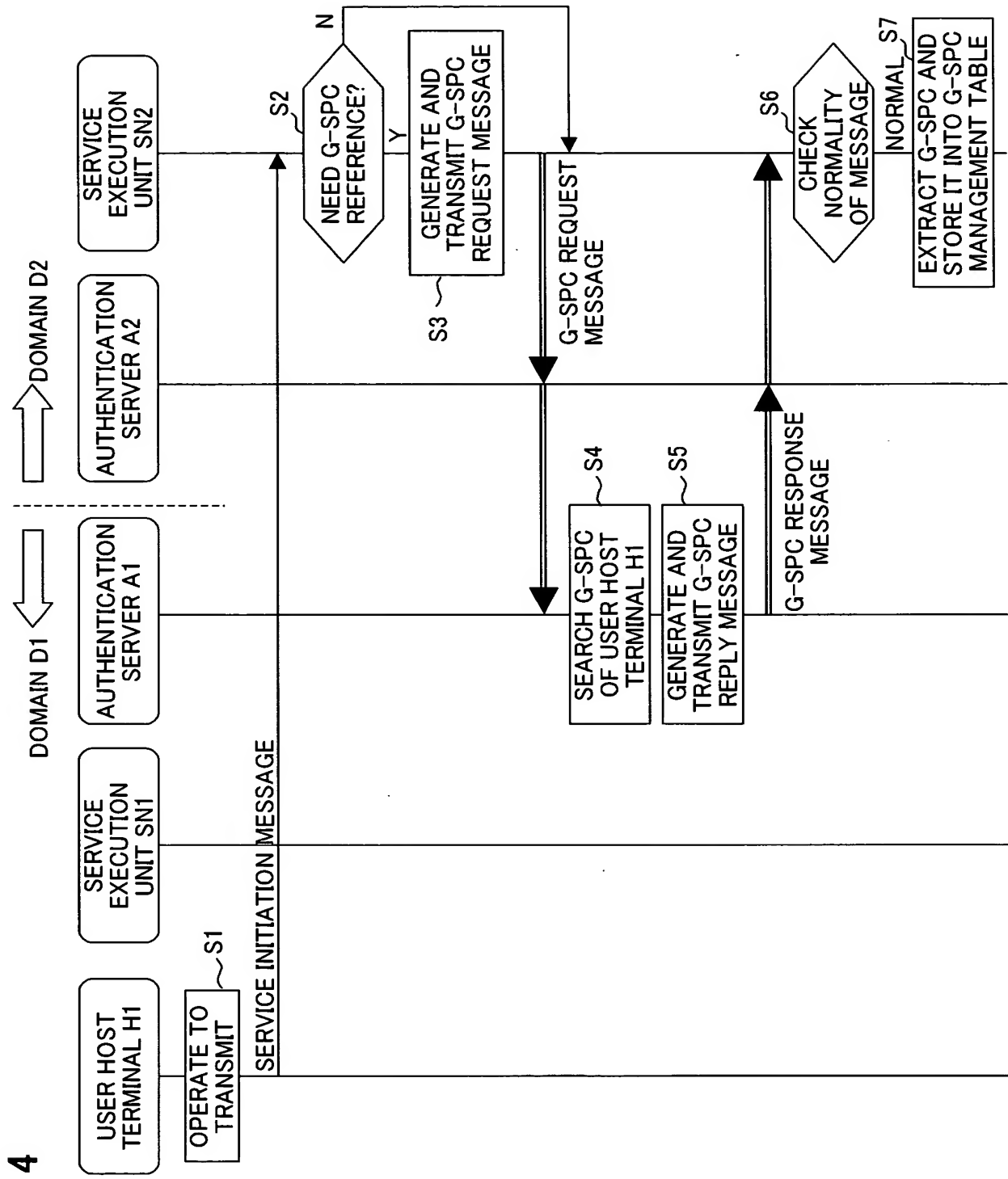


FIG. 5

THE G-SPC REQUEST MESSAGE TRANSMISSION PROCESSING
BY THE APPLICATION AUTHENTICATION MODULE

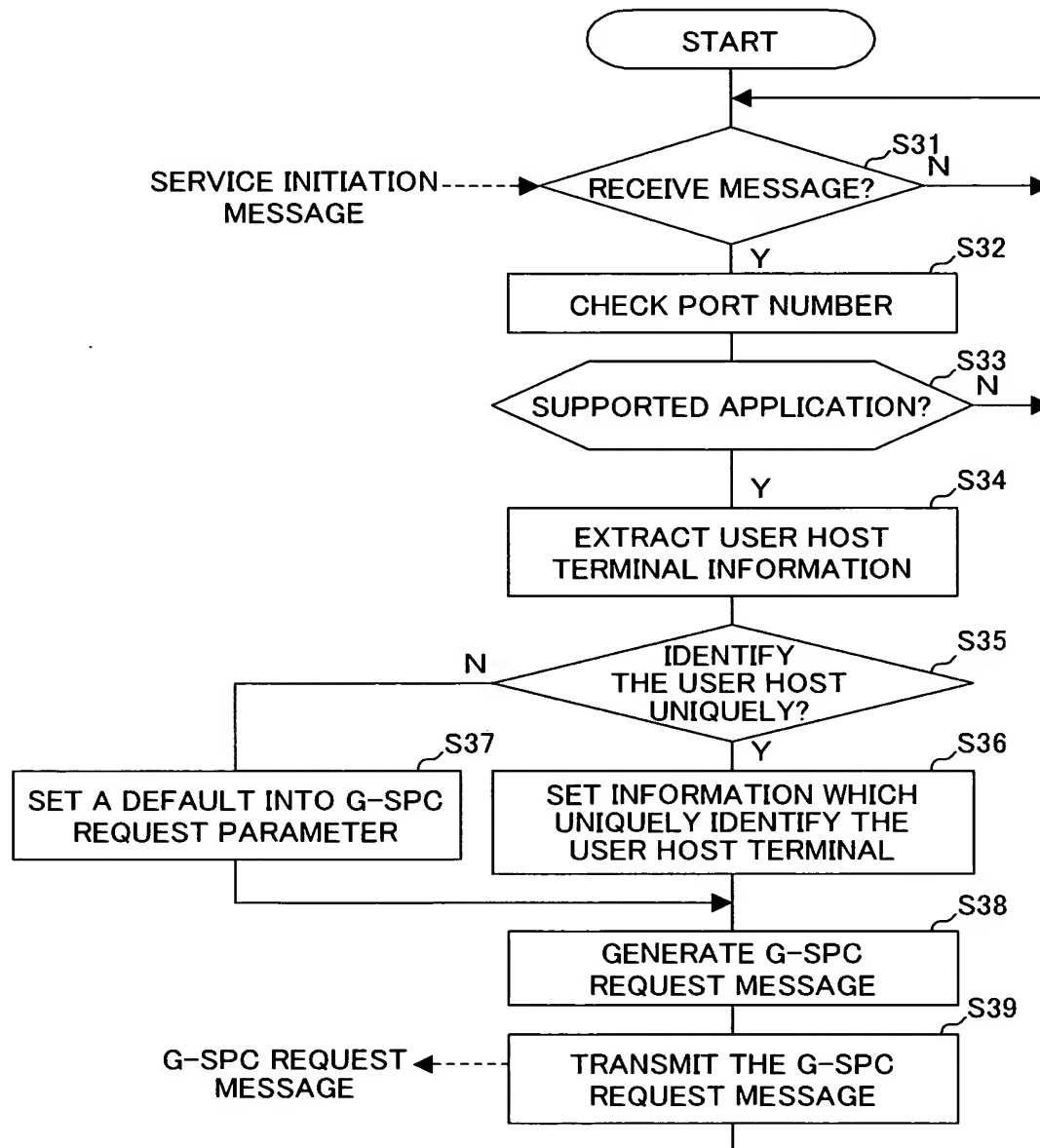


FIG. 6A

G-SPC/L-SPC REQUEST MESSAGE

IP/TCP/UDP PACKET HEADER	MESSAGE TYPE CODE	HOST ID INFORMATION 1 (IP ADDRESS)	HOST ID INFORMATION 2 (NAI)
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FIG. 6B

G-SPC/L-SPC RESPONSE MESSAGE

IP/TCP/UDP PACKET HEADER	MESSAGE TYPE CODE	HOST ID INFORMATION 1 (IP ADDRESS INCLUDED IN REQUEST MESSAGE)	HOST ID INFORMATION 2 (NAI INCLUDED IN REQUEST MESSAGE)	SEARCHED SPC (L-SPC/G-SPC)	RETURN CODE
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FIG. 7

L-SPC/G-SPC RESPONSE MESSAGE RECEPTION PROCESSING
BY THE APPLICATION AUTHENTICATION MODULE

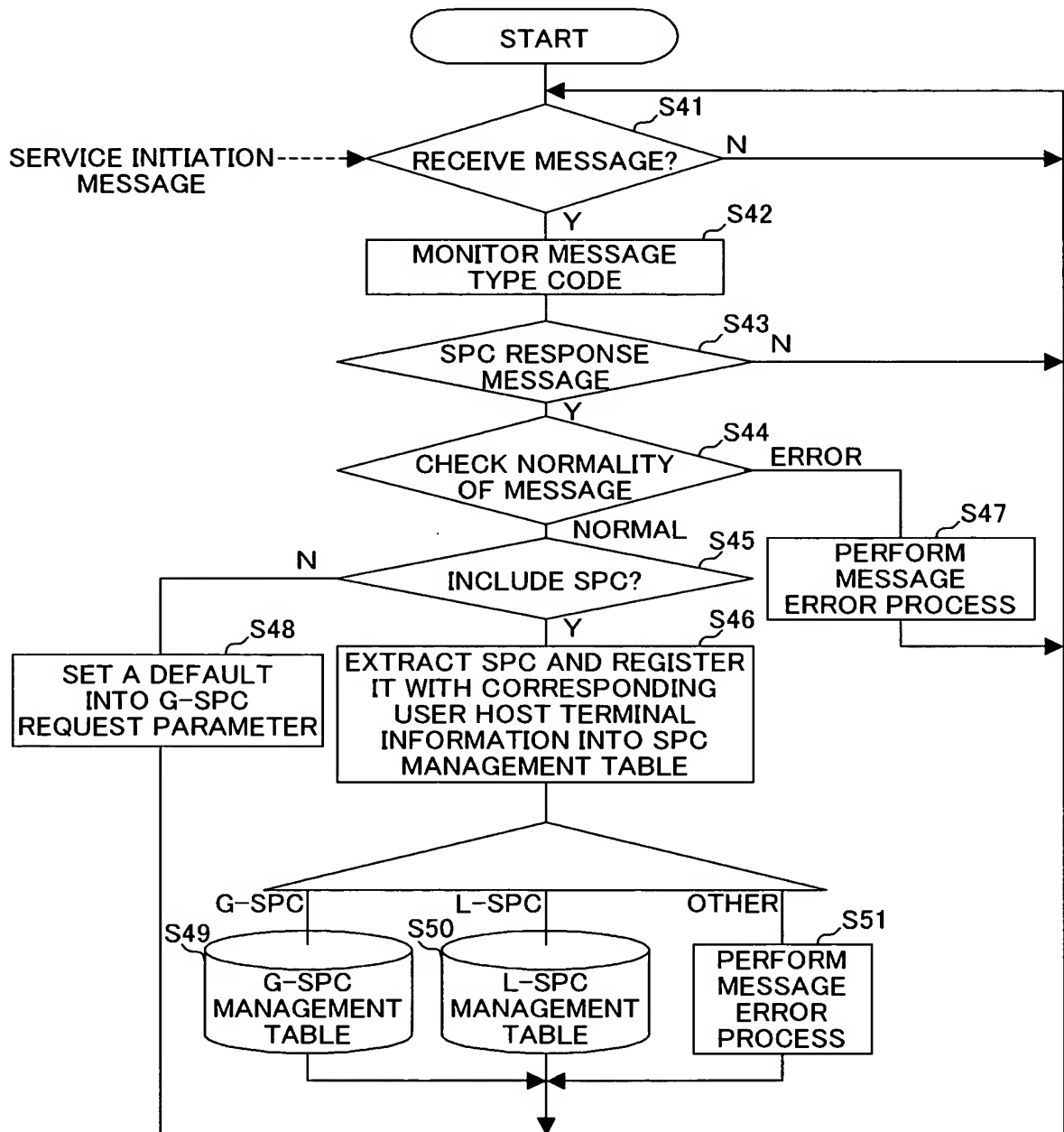


FIG. 8

MAIN SPC TABLE

USER NUMBER	BASIC CONTRACT INFORMATION	L-SPC POINTER	G-SPC POINTER
000001	192.168.1.1	0x343232	0x343232
000002	192.168.1.2	0x234234	0x234234
000003	192.168.1.3	0x115764	0x115764
000004	192.168.1.4	0x723411	0x723411
000005	192.168.1.5	0x098712	0x098712
000006	192.168.1.6	0x561218	0x561218
000007	192.168.1.7	0x131981	0x131981
000256	192.168.1.255	0x971341	0x971341

L-SPC TABLE PROVIDED FOR EACH USER (USER NUMBER 00001)

SPC NUMBER	CONDITION 1 (PORT NUMBER)	CONDITION 2 (HOST ADDRESS)	SPC CONTENT
1	80(HTTP)	EXTERNAL DOMAIN	APPLY ACCESS FILTER
2	XXX(VoIP-SIP)	NOT SPECIFIED	5% DISCOUNT OF TOLL CALL CHARGE

S-SPC TABLE PROVIDED FOR EACH USER (USER NUMBER 00001)

SPC NUMBER	CONDITION 1 (PORT NUMBER)	CONDITION 2 (HOST ADDRESS)	SPC CONTENT
1	80(HTTP)	12.123.124.255	CONTENTS CONVERSION (TRANSLATION)
2	25(SMTP)	15.67.23.21	MAIL VIRUS CHECK
3	XXX(VoIP-SIP)	23.45.56.223	AD DISTRIBUTION TO USER HOST TERMINAL

FIG. 9

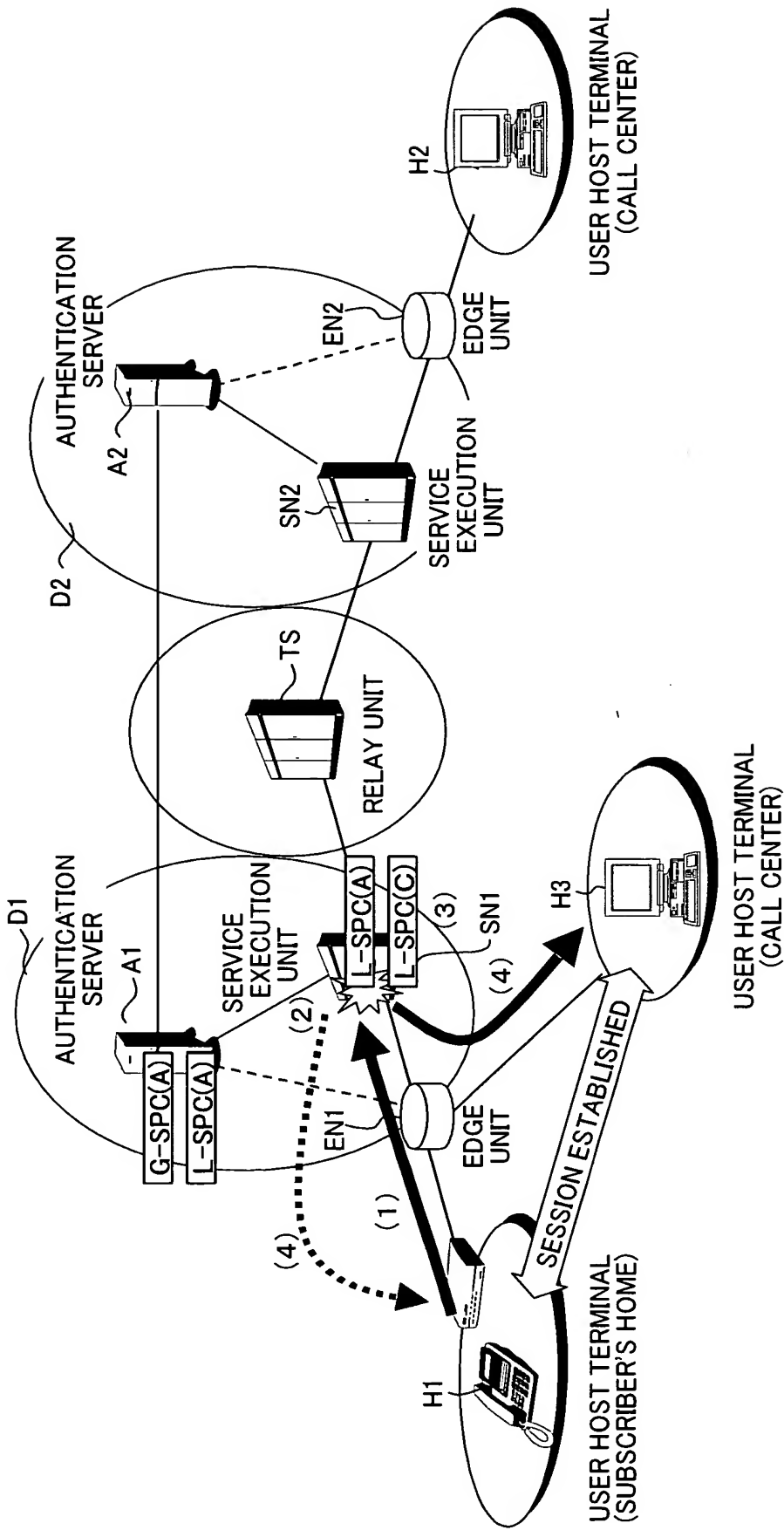


FIG. 10

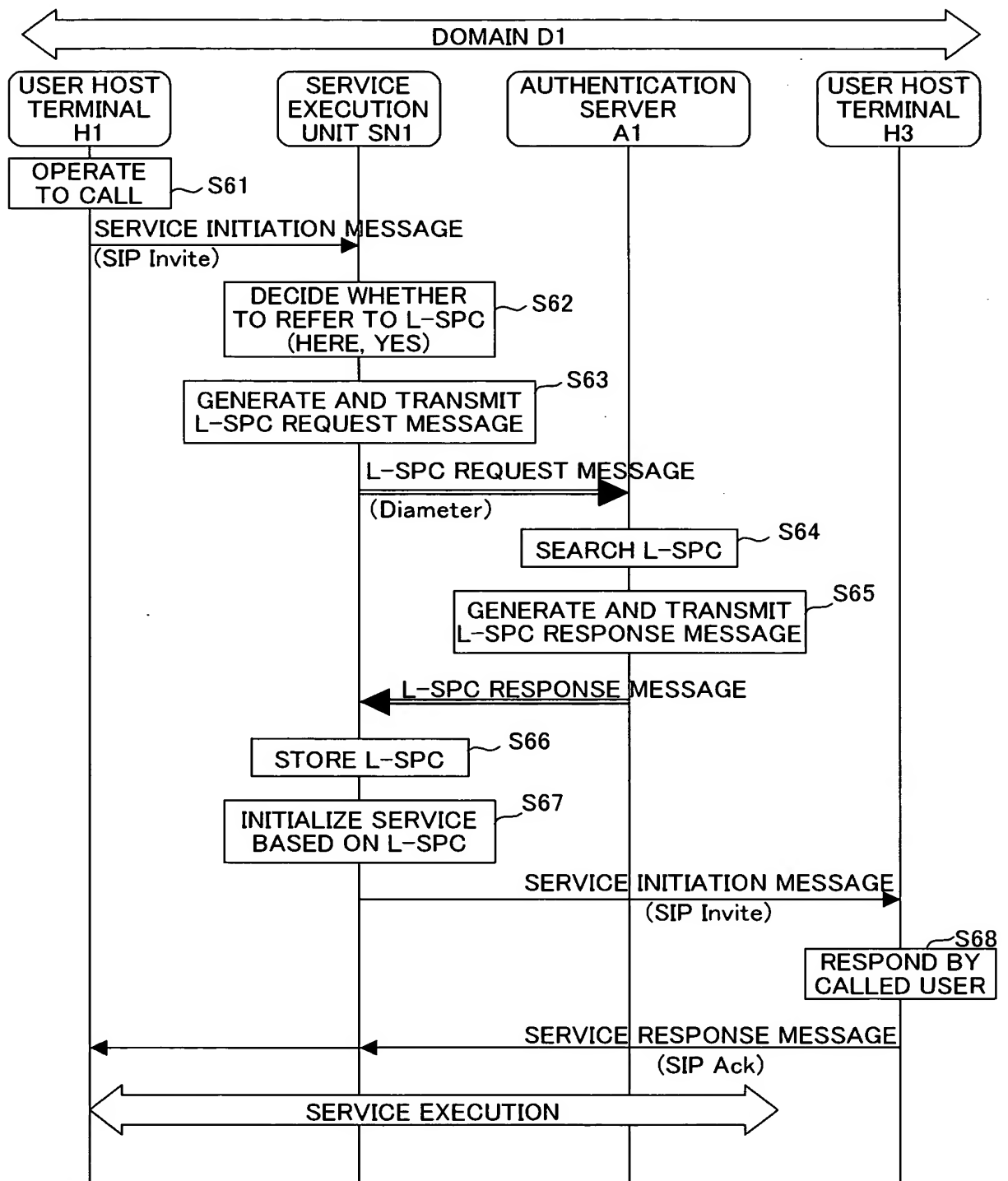
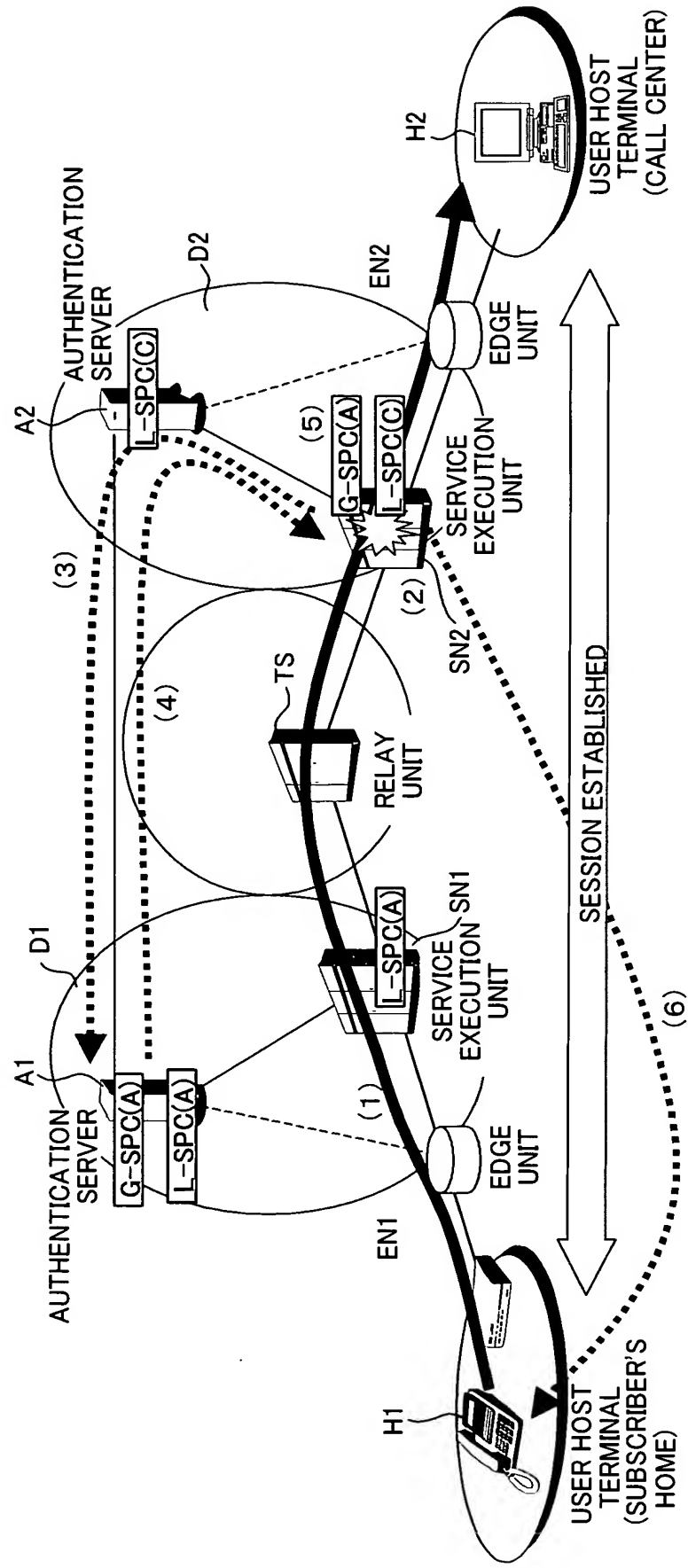


FIG. 11



The diagram illustrates the G-SPC service initiation process across two domains, DOMAIN D1 and DOMAIN D2, separated by a dashed line. The participants are:

- DOMAIN D1:**
 - HOST TERMINAL 1 (H1)
 - SERVICE EXECUTION UNIT SN1
 - AUTHENTICATION SERVER A1
- DOMAIN D2:**
 - USER HOST TERMINAL H2
 - SERVICE EXECUTION UNIT SN2
 - AUTHENTICATION SERVER A2

The process steps are as follows:

- S71:** HOST TERMINAL 1 generates a CALL.
- S72:** SERVICE EXECUTION UNIT SN1 sends a SERVICE INITIATION MESSAGE (SIP Invite) to AUTHENTICATION SERVER A1.
- Decision S72:** AUTHENTICATION SERVER A1 decides whether to refer to L-SPC (HERE, NO).
- S73:** AUTHENTICATION SERVER A1 sends a SERVICE INITIATION MESSAGE (SIP Invite) to AUTHENTICATION SERVER A2.
- Decision S73:** AUTHENTICATION SERVER A2 decides whether to refer to G-SPC (HERE, YES).
- S74:** AUTHENTICATION SERVER A2 sends a G-SPC REQUEST MESSAGE (Diameter) to SERVICE EXECUTION UNIT SN2.
- S75:** SERVICE EXECUTION UNIT SN2 sends a SEARCH G-SPC message to AUTHENTICATION SERVER A2.
- S76:** AUTHENTICATION SERVER A2 sends a G-SPC RESPONSE MESSAGE to SERVICE EXECUTION UNIT SN2.
- S77:** SERVICE EXECUTION UNIT SN2 sends a G-SPC RESPONSE MESSAGE to AUTHENTICATION SERVER A2.
- S78:** AUTHENTICATION SERVER A2 sends a SERVICE INITIATION MESSAGE (SIP Invite) to USER HOST TERMINAL H2.
- S79:** USER HOST TERMINAL H2 responds by calling the user.

The process concludes with a long arrow labeled **SERVICE EXECUTION** spanning the bottom of the diagram.

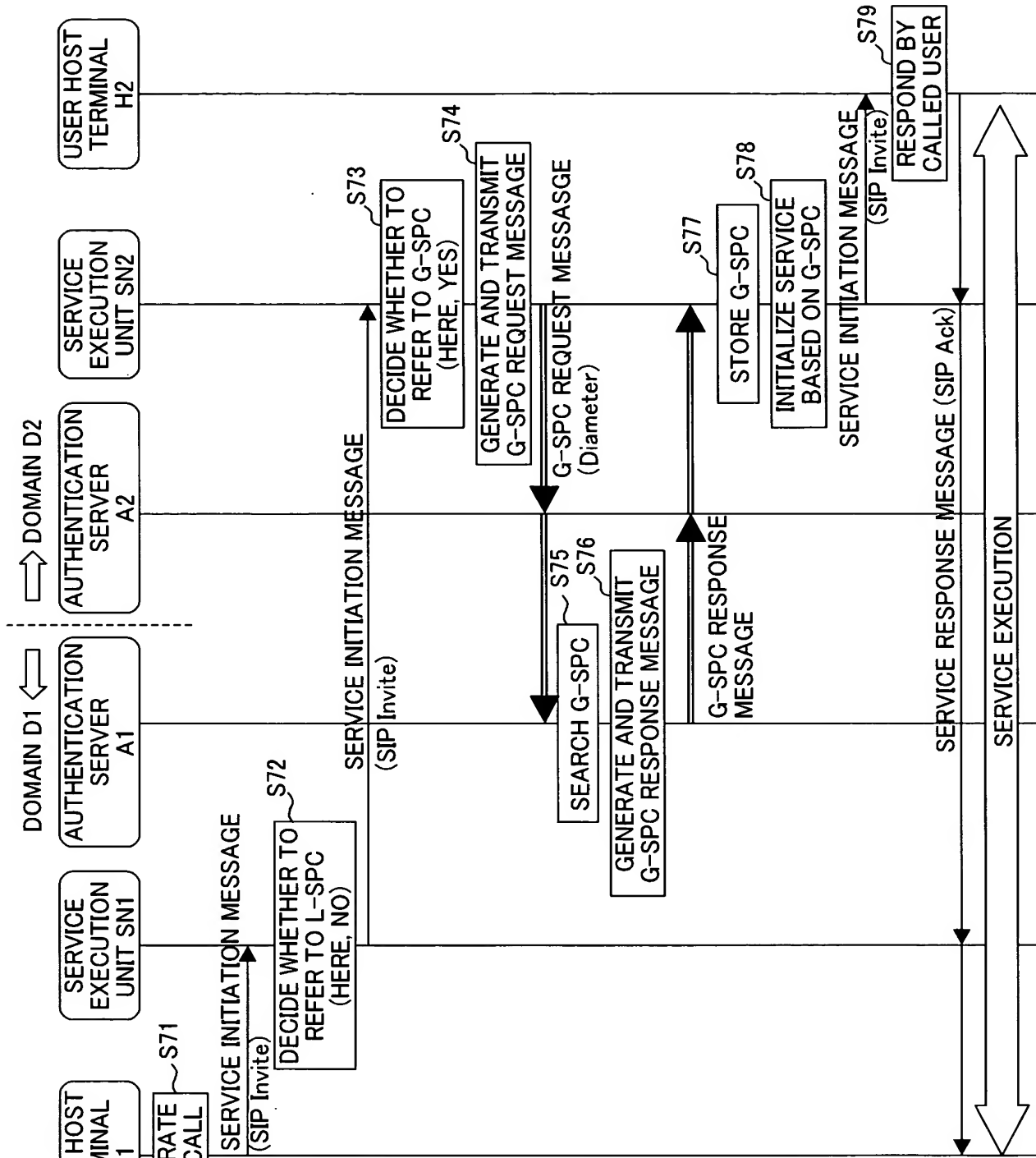


FIG. 13

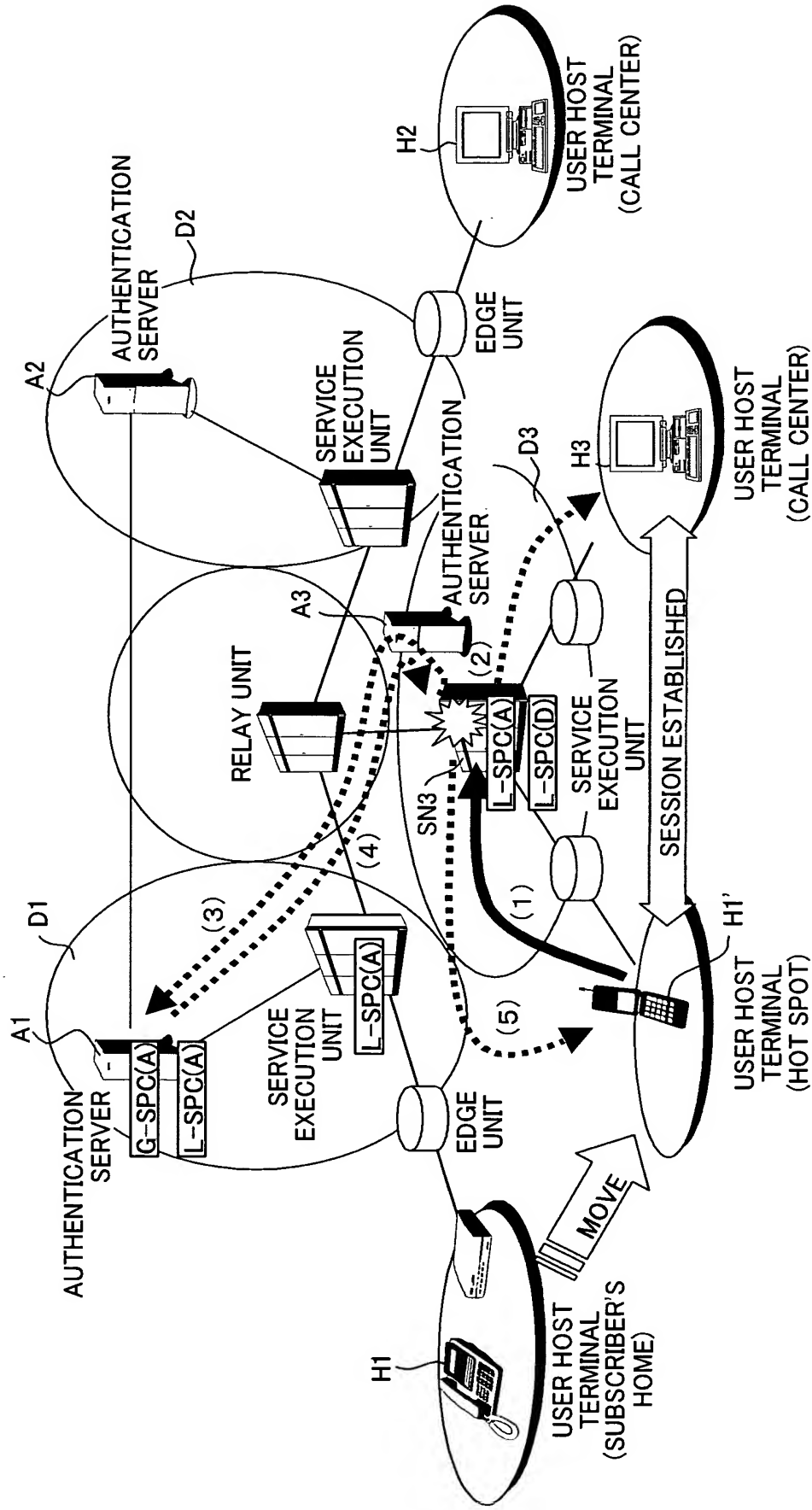


FIG. 14

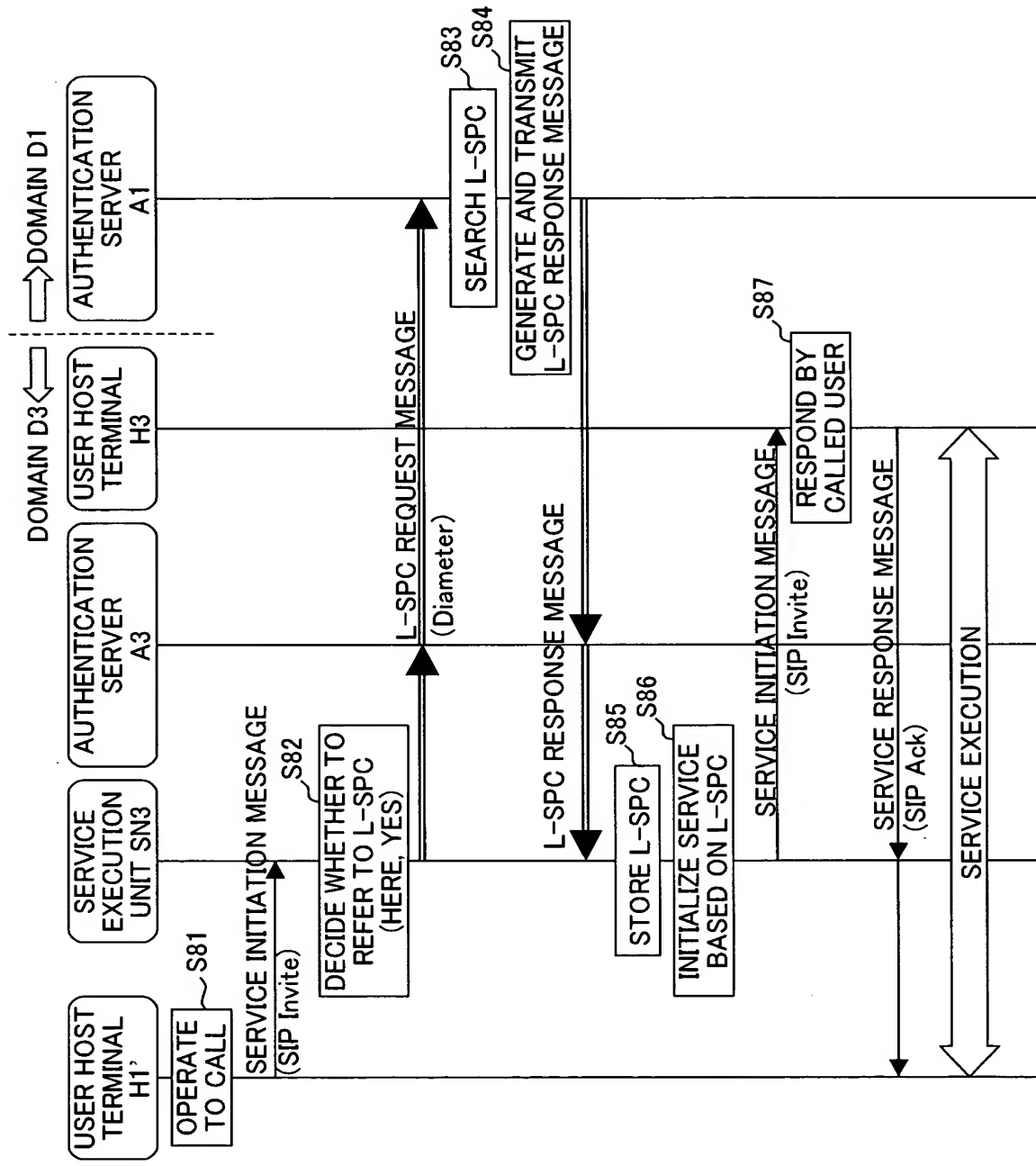


FIG. 15

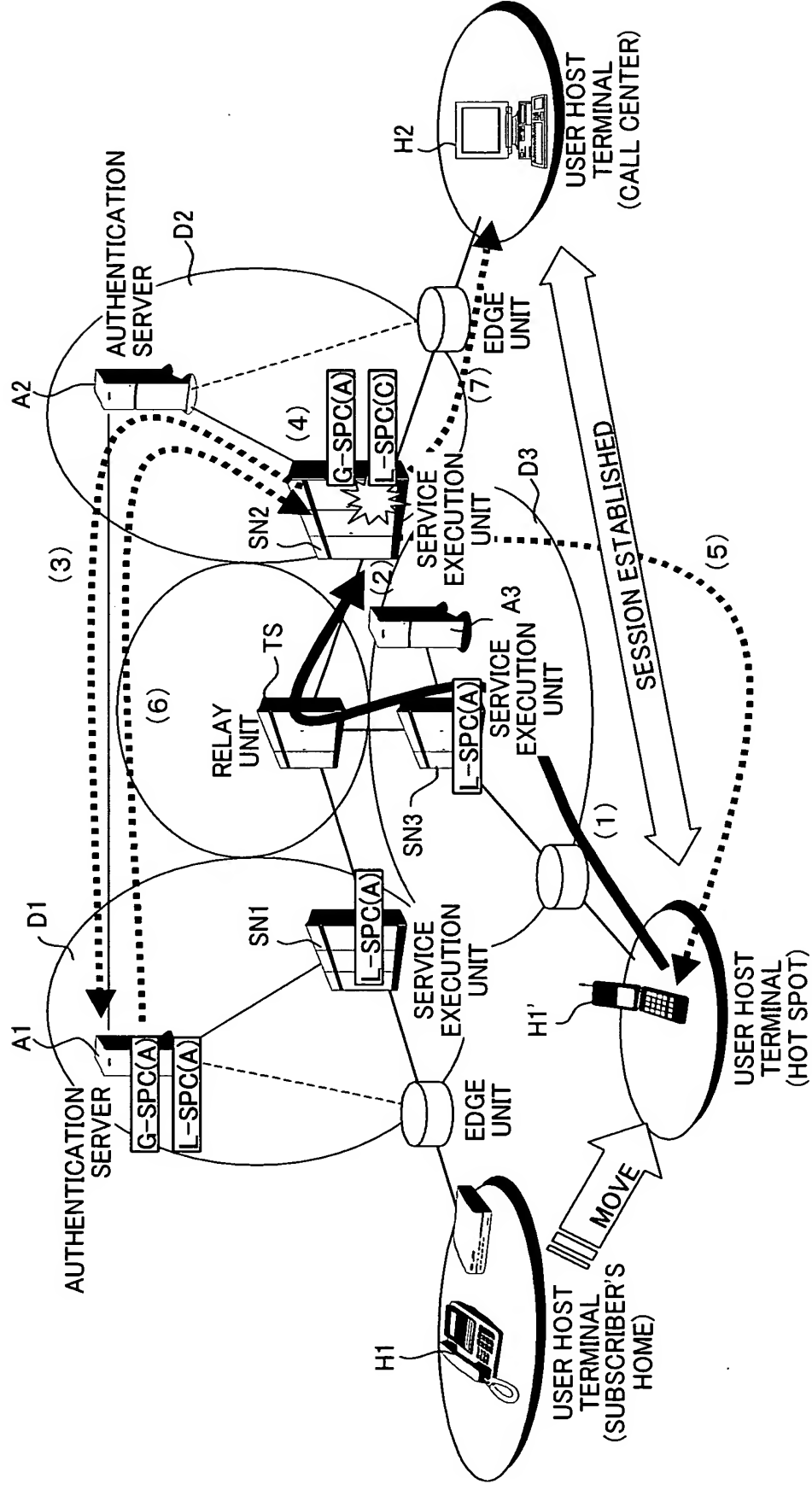


FIG. 16

